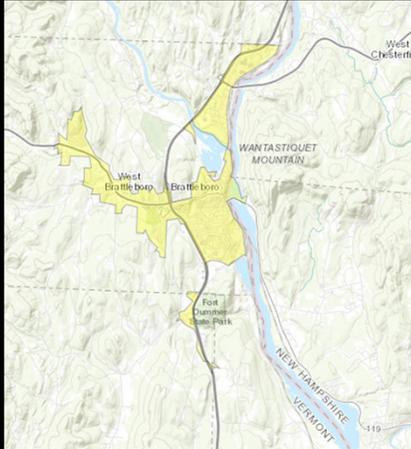


# Existing Conditions Presentation

Existing Bridges Subcommittee  
Hinsdale Police Station  
10 Main Street, Hinsdale, NH  
May 23, 2019

# Review of Population, Housing and Economic Indicators

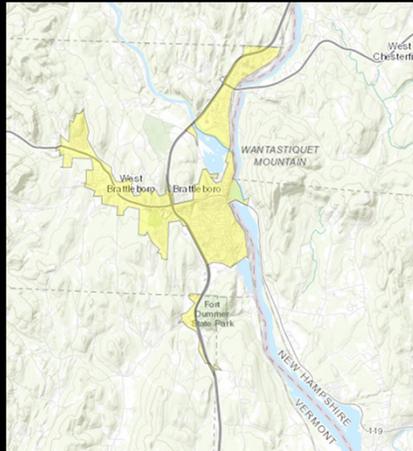
## Brattleboro-Hinsdale Urban Cluster 2017 5-year estimates



- 9350 people
  - Median age = 43.3
  - Under 18 = 19.6%
  - 65 and over = 21.3%
  - Female/Male = 51.9%/48.1%
  - Disability = 20.6%
  - Minority = 9.0%
- 4520 households
  - Average HH size = 2.00
  - Families = 47.4%
  - Without vehicle = 14.0%

- Most of the numbers I will be presenting are from the US Census' American Community Survey for the Brattleboro-Hinsdale Urban Cluster, which is developed from sample surveys sent to the population between 2012 and 2017.
- Approximately 9,350 people live in what the Census calls the Brattleboro-Hinsdale Urban Cluster.
- It's the smallest geographical unit with American Community Survey data relating to the study area.
- Notable stats are that about a fifth of the population has some kind of disability. The census defines these as hearing (4.7%), vision (2.4%), cognitive difficulty (11.8%), ambulatory difficulty (9.8%), self-care difficulty (4.5%), independent living difficulty (8.7%)
- Also notable is that the minority population is 9%. Minority number = not "white alone"
- There are about 4520 households in the study area, more of which are non-family households.
- 14% of the households don't have access to a vehicle which is fairly high.

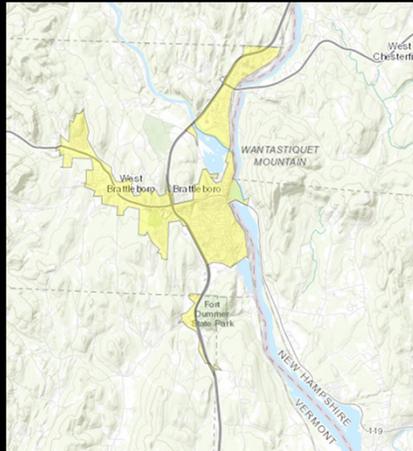
## Brattleboro-Hinsdale Urban Cluster 2017 5-year estimates



- 4914 housing units
- Owners= 41.1%
- Occupied housing units = 92%
  - Homeowner vacancy rate = 0.0%
  - Rental vacancy rate = 3.2%
- Rent > 30% of income = 57.2%
- Median value of owner occupied housing unit = 180K

- There are a little over 4,900 housing units in the study area, most of which are rental units.
- The market is fairly tight according to this Census data.
- Almost 60% of renters are paying 30% or more of their household income towards housing.

## Brattleboro-Hinsdale Urban Cluster 2017 5-year estimates



### • Poverty Status

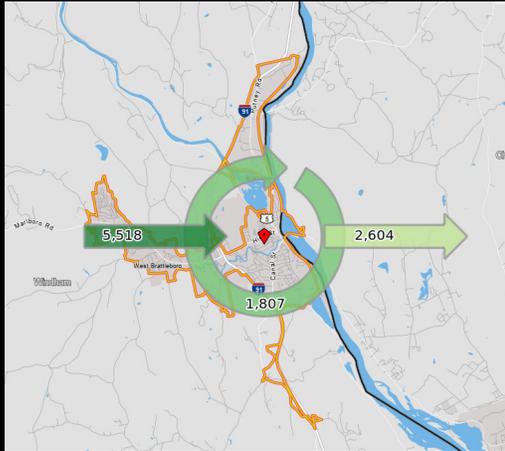
- 100% of poverty level = 21.8%
  - 4 person family = \$25,465
  - 1 person under 65 = \$13,064
  - 1 person over 65 = \$12,043

### • Employment Status

- 9.6% unemployed
  - ages 20-29 = 20% unemployed
- 42.5% worked 35 hours per week 48 weeks or more out of year

- About one fifth of the population is living in poverty
- For those that are working age (16 and over), the unemployment rate is 9.6%, with a surprising 20% of 20-29 years olds unemployed.
- Only 43% of the working age population worked a full time job 48 weeks or more out of a year.

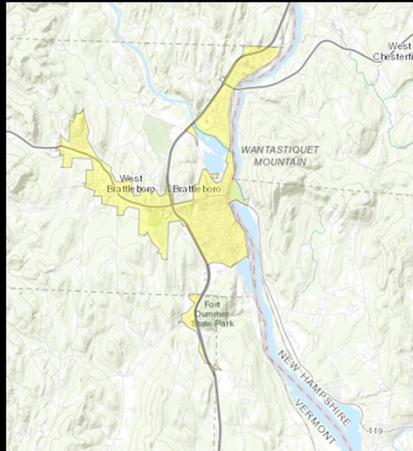
## Brattleboro-Hinsdale Urban Cluster 2015 LEHD Census Data



- 7,325 jobs in area
- Worker by age:
  - < 30 = 21.7%
  - 30-54 = 51.5%
  - 55+ = 26.8%
- Jobs by monthly earnings:
  - < \$1,251 = 19.8%
  - \$1,251-\$3,333 = 42%
  - > \$3,333 = 38.2%
- Top industries
  - Healthcare & Social Assistance = 20.6%
  - Retail = 14.2%
  - Accommodation and Food Services = 10.3%

- There are 7,325 jobs in the area
- Translates to roughly 36% of Windham County's jobs
- More residents work elsewhere (59%) than work in the area (41%), with about 8% working within 10 miles and another 24% working between 10- 25 miles away
- There are more people coming in to work in the area from other areas, but 50% are within 10 miles
- Age distribution similar to Windham County (21/50/29%) and Cheshire County (23/48/29%)
- Earnings little different than Windham County (23/37/39%) and Cheshire County (21/37/42%). The trend for the counties is that there are successively more workers in higher earning jobs.

## Brattleboro-Hinsdale Urban Cluster 2017 5-year estimates

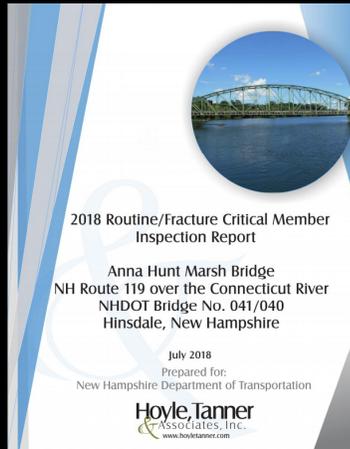


- Workers 16 and over = 4,234
- Commute
  - Motor Vehicle = 76.7%
  - Work at Home = 10.3%
  - Walk = 8.9%
  - Public Transit = 1.3%
  - Bicycle = 0.3%
  - Other = 2.5%
- Vehicles Available
  - 0/1/2 or more = 1.5%/43.6%/54.9%
- Travel Time to Work
  - Less than 10 minutes = 31.8%
  - Median travel time = 16.1 minutes

- There are approximately 4,200 working age people living in the area
- Most of them drive, which is understandable given that 59% work outside of the area
- There are a significant number of walkers, but minimal bicyclists
- Roughly 64 workers don't have vehicles

# Review of Important Documentation regarding the Existing Bridges

# Anna Hunt Marsh Bridge (041/040)



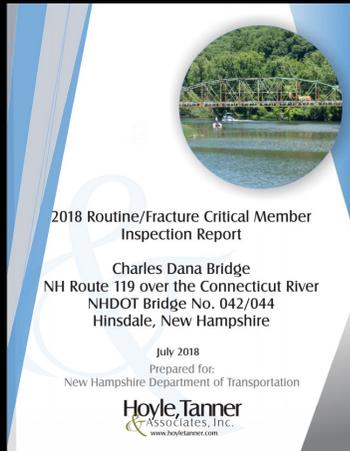
- Added as red list bridge in 2018
- Year built, rehabbed: 1920/1988
- Road width = 20' feet, 4 inches
- Length = 339 feet
- Height limit = 11.55 feet
- Deck = Good
- Superstructure = Poor
- Substructure = Satisfactory
- Scour rating = Stable
- Federal Sufficiency Rating = 27.8

- The bridge is comprised of two (2) Camelback through steel trusses spaced at 23'-0" and has a span length of 330'-0". Truss members consist of riveted built-up chords, verticals, diagonals and horizontals. The floor system consists of variable thickness precast concrete deck panels supported by eight end panel and intermediate panel stringer lines and floorbeams at interior panel points. The bridge deck supports a 20'-4 1/8" roadway. The bridge also supports a 5'-3" cantilevered sidewalk with a timber deck.
- RSA 266:18-a Weight on Non-interstate and General Highway System: This section defines maximum vehicle weights for all highways not considered Interstate Highways. It also defines requirements for individual axle weights and spacings, and generally limits vehicle weights to: Two axle single unit: 33,400 lbs. Three axle single unit: 55,000 lbs. Four axle single unit: 60,000 lbs. Combination vehicles (Tractor -Trailer): 80,000 lbs.
- Bridge deck was replaced in 2004 and the floor system (stringers and floorbeams) was replaced in their entirety in 1988.
- The bridge rail was replaced with double nested Wbeam guardrail in 1988.
- What is a bridge's "sufficiency rating?" Sufficiency ratings were developed by the Federal Highway Administration to serve as a prioritization tool to allocate funds. The rating varies from 0 percent (poor) to 100 percent (very good). The formula considers structural adequacy, whether the bridge is functionally obsolete and

level of service provided to the public.

- Anna Hunt Marsh (c. was born in Hinsdale in and is known for donating funds to create the Brattleboro Retreat, originally known as the Vermont Asylum for the Insane.

# Charles Dana Bridge (042/044)

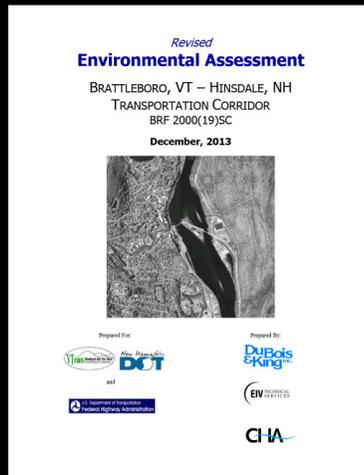


- Added as red list bridge in 2018
- Year built, rehabbed: 1920/1988
- E-2 Bridge
- Road width = 20' feet, 4 inches
- Length = 297 feet
- Height limit = 12.14 feet
- Deck = Good
- Superstructure = Poor
- Substructure = Fair
- Scour Rating = 7 Countermeasures
- Federal Sufficiency Rating = 37

- The bridge is comprised of two (2) Camelback through steel trusses spaced at 22'-8" and has a span length of 200'-0". Truss members consist of riveted built-up chords, verticals, diagonals and horizontals. The floor system consists of variable thickness precast concrete deck panels supported by eight (8) stringer lines and floorbeams at interior panel points. The bridge deck supports a 20'-4 1/8" roadway. A cantilevered sidewalk with a timber deck was added to the bridge in 1994.
- The bridge deck was replaced in 2004 and the floor system (stringers and floorbeams) was replaced in their entirety in 1988. The bridge rail was replaced with double nested Wbeam guardrail in 1988. A cantilevered sidewalk was added to the northerly truss in 1994.
- What is a bridge's "sufficiency rating?" Sufficiency ratings were developed by the Federal Highway Administration to serve as a prioritization tool to allocate funds. The rating varies from 0 percent (poor) to 100 percent (very good). The formula considers structural adequacy, whether the bridge is functionally obsolete and level of service provided to the public.
- **Charles Anderson Dana** (August 8, 1819 – October 17, 1897), born in Hinsdale, NH, was an American [journalist](#), author, and senior government official. He was a top aide to [Horace Greeley](#) as the managing editor of the powerful Republican newspaper [New York](#)

[Tribune](#) until 1862. During the [American Civil War](#), he served as Assistant Secretary of War, playing especially the role of the liaison between the War Department and General [Ulysses S. Grant](#). In 1868 he became the editor and part-owner of the New York Sun. He at first appealed to working class Democrats but after 1890 became a champion of business-oriented conservatism. Dana was an avid art collector of paintings and [porcelains](#) and boasted of being in possession of many items not found in several European museums.

# Environmental Assessment



- Outlines approval of Alternative F
- Some project commitments:
  - Bridge committee of community leaders full partner in the final design
  - NHDOT and VAOT are to minimally rehabilitate the existing Route 119 bridges in accordance with Secretary of Interior's standards for pedestrians, bicycle or an alternative transportation use.
  - VAOT and NHDOT are to share maintenance responsibilities for the rehabilitated Route 119 bridges.

- A new Bridge Committee of community leaders from both Hinsdale and Brattleboro will be formed which would be a full partner in the final design of Alternative F's new bridge. The Bridge Committee's input into the design process will consider architectural aesthetics as a criterion in determining a final design.
- NHDOT and VAOT are to minimally rehabilitate the existing Route 119 bridges in accordance with the Secretary of Interior's Standards for pedestrians, bicycle or an alternative transportation use.
- VAOT and NHDOT are to share maintenance responsibilities for the rehabilitated Route 119 bridges.



# Review of Stakeholder Input

## NH Department of Environmental Services



Figure 1. View of Hinsdale Island toward Brattleboro, Vermont (1879). Source: Brattleboro Historical Society.

- Hinsdale Island was much larger before Vernon Dam.
- First bridged in 1803.
- Vernon Dam constructed in 1909.
- Parts of Hinsdale Island inundated were completely eroded in 1936.

- Hinsdale Island was once much larger in size, as compared to today.
- When first bridged in 1803, the island was rich farmland.
- The sections of the island that were inundated by the construction of Vernon Dam (all of which does not currently remain) was completely eroded away by 1936.
- Vernon Dam was constructed in 1909.

## NH Department of Environmental Services



Figure 3. Aerial photograph of Hinsdale Island (2015). Note the darker, deeper channels to the west and east of the island.

- After Vernon Dam, inundated the lower elevation areas, particularly northern side
- Hinsdale Island mostly alluvium (river deposited sediment)
- Route 119 road bed is only fill on island

- After its construction, the Vernon Dam elevated the water level in the river so that it inundated the lower elevation areas of the island, particularly on its northern side.
- Hinsdale Island was mapped for its surficial geology, through the Surficial Geologic Mapping Program in 2000, and was found to consist of alluvium (river deposited sediment), except for the existing Route 119 roadbed, which is comprised of fill.
- The Route 119 road bed is the only location that was found to be mapped as fill on the existing island.
- Aside from the Route 119 fill, elevations of the terrain on significant portions of the island are only 2 to 3 feet higher than the normal water surface elevation of the Connecticut River (LiDAR imagery, Figure 6).

## NH Department of Environmental Services



- Hinsdale Island's boundaries shown in 1960, 2010 and 2015.
- From 1960 to present, it has maintained its basic form and location.
- However the island has grown in size.

- Three aerial photographs were used by NHGS to evaluate the change in island planform temporally: 1960, 2010, and 2015.
- Overall, from 1960 to the present, Hinsdale Island has maintained its basic form and location.
- However, as can be seen in the comparison of the island boundaries through time, the island has, overall, grown in size.
- In 1960, the size of the island, based on the digitized boundaries, is approximately 378,000 ft<sup>2</sup>.
- The size increased to 440,000 ft<sup>2</sup>, and then to 468,000 ft<sup>2</sup> (2010 and 2015, respectively).
- Areas of maximum accretion occurred at the southern tip and the north corner of the island.
- However, an area of erosion, with time, exists at the northwest tip of Hinsdale Island. Here, the island boundary in 2015 is about 75 feet south of its boundary in 1960.

## NH Department of Environmental Services



Figure 5. Aerial image of Hinsdale Island from 2009, showing inundation of island portions during high water.

- Island shown during period of inundation in 2009.
- The temporal analysis suggests that Hinsdale Island is largely accreting and not eroding.
- Risk of erosion contingent on a number of factors.

- The temporal analysis alone suggests that Hinsdale Island is largely accreting and not eroding, except for a section at its northwest tip.
- Although this is the result of the requested analysis, the risk of further island erosion beyond what the trends suggest is possible, as a result of the following enumerated factors.
  1. The fact that sections of the island (not currently existing) eroded away after it was permanently inundated by 1936.
  2. The fact that the island (aside from Route 119 which is fill material) is comprised of alluvium.
  3. The fact that sections of the island do become inundated during higher flows (see Figure 5).
  4. The existence of a small flood chute that branches off of the main Connecticut River flow and onto the island's east side, which could transport high flows and potentially erode.
  5. Aside from the Route 119 fill, elevations of the terrain on significant portions of the island are only 2 to 3 feet higher than the normal water surface elevation of the Connecticut River (LiDAR imagery, Figure 6).

## NH Department of Environmental Services

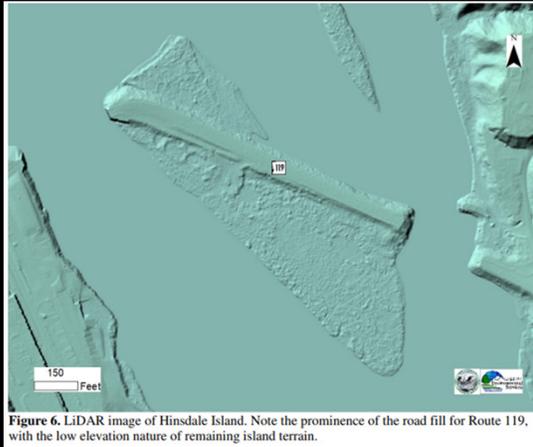


Figure 6. LiDAR image of Hinsdale Island. Note the prominence of the road fill for Route 119, with the low elevation nature of remaining island terrain.

- In its current form, areas of island at reduced risk of erosion are:
  - Deposited sand has been in existence for longer period of time
  - Where there is vegetation to hold the sand in place.
- Further investigation is recommended

- While the aerial photograph analysis suggests that the island is accreting material, locations of accretion seemingly correspond with areas most prone to inundation during higher flows (such as in Figure 5).
- In its current form, areas of the island that will be at reduced risk for erosion will be those where (1) deposited sand has been in existence for a longer period of time and is more accumulated, and (2) that has increased integrity as a result of vegetation to hold the sand in place.
- It would be recommended that a further investigation of Hinsdale Island be undertaken to evaluate the stability of its sandy surface, and its ability to be eroded, the extent to which vegetation is contributing to stability, and the extent of erosion on the northwest tip. Such a field evaluation will be required before further comments regarding the long-term erodibility potential of the island can be made, and should be conducted by an individual trained in geomorphology or earth surface processes.

# Hinsdale and Brattleboro Police



Photo credit: Krisopher Radder –  
Brattleboro Reformer

- January 2017 to June 2018 Hinsdale police responded 300 times for existing bridges.
  - 140 motor vehicle related (crashes, lockouts and motorist assists)
  - 160 calls (other)
    - 46 suspicious activities
    - 3 drug activities
    - Armed robbery, suicide threat, animal complaints
- Zero calls for service on Hinsdale Island for Brattleboro police, fire, and Rescue, Inc from May 30, 2017 through May 30, 2018
- Heroin use a problem on the island
- Short maintained, vegetation needed in order to provide adequate surveillance

## Owner of George's Field



- Concerned about litter on island, homelessness
- Not supportive of island serving as park, would rather see it designed so people move through it on bicycle, walking, or kayaking
- Would like to see bicycle/sidewalk path to George's Field parking lot
- Would like to see sidewalk to George's Field at entrance
- Concern about former NH 119 strip of land

## Owner of Norm's Marina



- If something good for community, manager supports it, but now eyesore
- Needs to be plowed in winter to allow for year-round use
- Doesn't want to see repeat of W. Chesterfield bridge
- Island floods annually, only roadbed is available

# Brattleboro Museum & Arts Center



- Has interest in developing property across Bridge Street with connection to Museum
- Wants to make Bridge Street more pedestrian friendly
- Sees opportunities to use bridges and island for arts-related events

## Co-Founder of Whetstone Station



- Interested in expanding outdoor seating up to bridge
- Interested incorporating the project area into events
  - Brewers fest on bridge
- Suggested small stage on Island for unique performance venue

## Abenaki

- 2000 Vermont and New Hampshire SHPO Section 106 Letter of Effect
  - The study found that no artifacts were identified during surveys and that the island had low potential for intact resources.
- Study Area meets macro-environmental indicators signaling historic Native presence
  - Intervale Flood Plains with major settlement sites situated along stretches of the upper Connecticut River where its gradient is low and meanders occur along with oxbows and mid-river islands.
  - River Terraces located on both sides of the upper Connecticut River and the lower courses of major tributaries well above annual flood lines always presented good localities for settlement sites particularly during Woodland times.

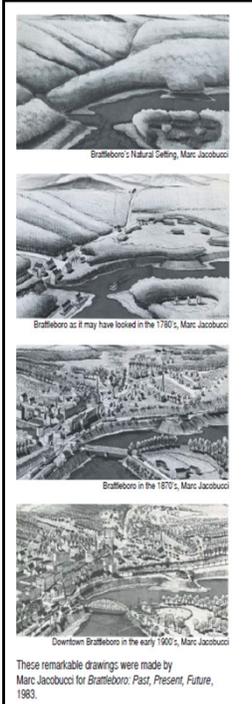
Intervale Flood Plains: The construction of dams and hydroelectric facilities resulting in reservoirs has flooded out large tracts of riparian forests and alluvial meadows which most probably contained substantial settlement remains.

Source: *Western Abenaki of the Upper Connecticut River Basin* by R. Duncan Mathewson III, *The Journal of Vermont Archaeology*, Volume 12, 2011; discussion with Rich Holschuh

# Review of Plans & Planning Efforts

## Local and Regional Plans in New Hampshire

- Hinsdale Master Plan
  - Recreational access to river
  - Advocates for alternative transportation
- EPA Sustainable Cities
  - Promote river
  - Plan for island and bridges
- Complete Streets Policy and Design Guidelines
- Southwest Connects
  - Preserve elements of transportation history
  - Improve transportation modal choices/options
- Comprehensive Economic Development Strategy
  - Mostly focuses on getting the new bridge built



## Local and Regional Plans in Vermont

- Brattleboro Town Plan
- Windham Regional Plan
- Windham Regional Bicycle and Pedestrian Plan
- Windham Regional Transportation Plan
- Southern Vermont Comprehensive Economic Development Strategy
- Vermont Long-Range Transportation Plan
- Rail with Trails Study 2001-2002 Southern Segment of the Brattleboro Link
- Build a Better Waterfront
- Brattleboro Waterfront Brownfields Assessment and Cleanup

No specific reference to this project (NH)

All plans have goals and policies supporting:

- Support bike/ped facilities, linkages, and projects especially where can increase economic development
- Support historic structure preservation

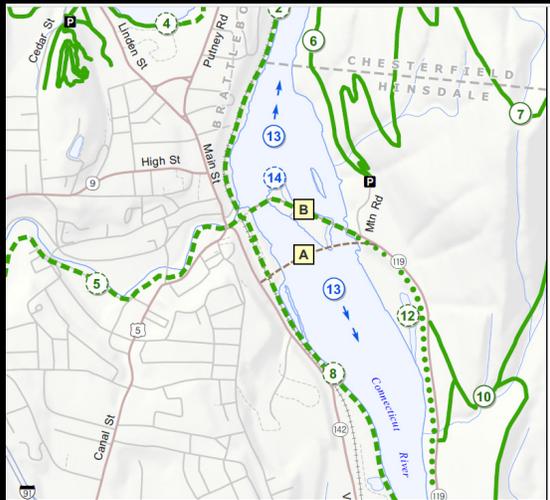
Build Better Waterfront public input:

1. A desire to make a public commons at the river's edge.
2. Recognition that redevelopment of the adjacent site (Merrill Gas) would create more than enough development opportunity.
3. Concern over the effects on Main Street of a new commercial block.
4. An enthusiasm for the site to function as a connector for recreational trails and paths, as a place to celebrate Brattleboro history, and provide environmental benefit.

Brownfields Assessment/cleanup:

- Site has been cleaned up with demolition of waterfront building and cleanup of soils and cap geofabric cap & soil over stationary coal flumes

# Trail Connections Map (Handout 1)

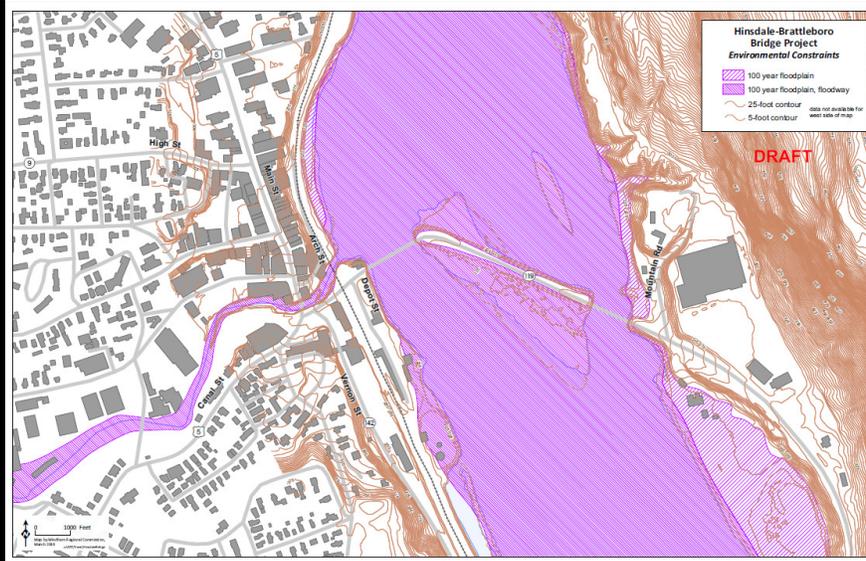


**Hinsdale-Brattleboro  
Bridge Project**  
*Trail Connections*

- A** Bridge project
- 1** Existing trails
- 2** Potential connections
- P** Trail parking

This map documents existing and potential walking, biking, and paddling trail opportunities based on various trail stakeholders in Vermont and New Hampshire.

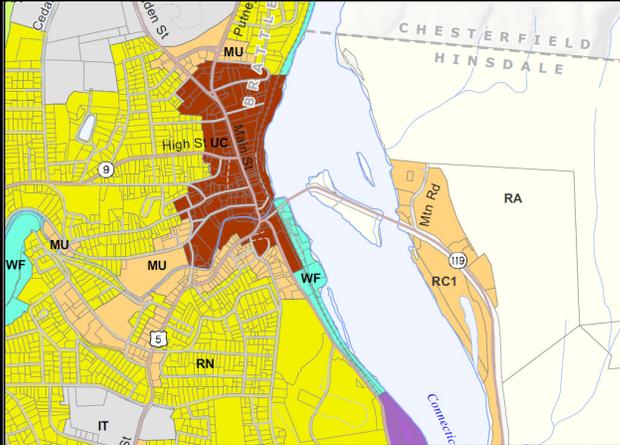
# Environmental Conditions Map (Handout 2)



# Transportation Systems (Handout 3)



# Zoning (Handout 4)



## Hinsdale-Brattleboro Bridge Project Zoning Districts

### Brattleboro zoning

- Industrial
- Institutional
- Mixed Use Neighborhood
- Neighborhood Center
- Residential Neighborhood
- Rural Residential
- Urban Center
- Waterfront

### Hinsdale zoning

- Roadside Commercial District 1
- Rural Agricultural District

## Next Steps

1. Important information missing?
2. Report back to Hinsdale-Brattleboro Bridge Project Advisory Committee (PAC) at June 5<sup>th</sup> meeting.
3. Existing Conditions report will be finalized and shared with both the Subcommittee and PAC.
4. Begin working on redevelopment goals and draft design scenarios for study area and outreach strategy.
5. Work with design consultant to explore scenarios?

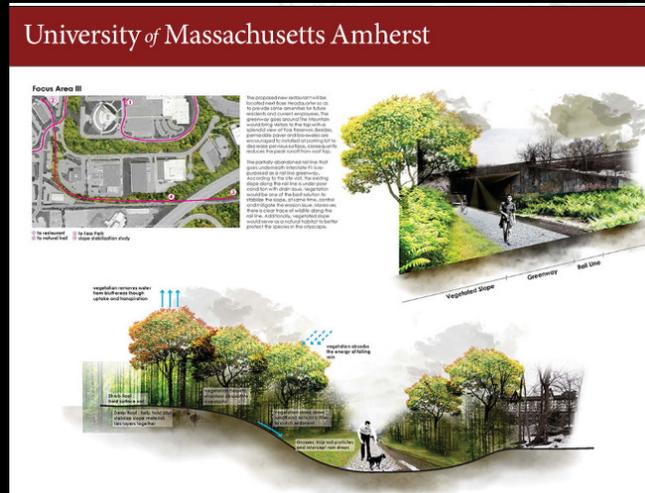
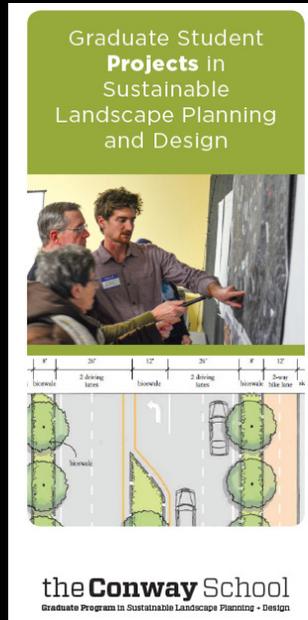
The last two we'll dive into more details but this is a primer

- 1) Let us know by June 3
- 2)
- 3)
- 4) Next meeting focusing on these big items- scheduled for July

# Project Schedule



# Design Consultants



## About the Conway School

The program approach emphasizes ecological and social sustainability, rigorous design process, and public participation.

Core faculty are seasoned professionals, trained in landscape architecture, planning, architecture, permaculture, and regenerative design. Visiting instructors and speakers bring additional depth.

Students combine hand drafting with technology such as geographic information systems, computer aided design, and desktop publishing.

Highly motivated students from around the US graduate from the accredited, 10-month program with a Master of Science in Ecological Design. They complete three significant projects over three terms.

## UMAS LARP

### Department Mission Statement

The Department of Landscape Architecture and Regional Planning at UMass Amherst provides **Sustainable Solutions to Complex Problems**. We educate outstanding students, serve diverse communities, and undertake influential scholarship. We seek to exemplify a new generation of professionals and educators who work collaboratively across disciplines and cultures. This provides leadership

to find regenerative, equitable and beautiful designs, spatial and social practices.